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UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Technical Standards Committees
(Electric)

Supplement No. 2, January 1982, to
REA Bulletin 43-5
LIST OF MATERIALS ACCEPTABLE FOR USE ON
SYSTEMS OF REA ELECTRIFICATION BORROWERS

The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of October 1981, through January 1982. The following changes should be made in order to keep it up to date. Pages with a colon between are on the same sheet, both being changed.

<u>Add</u> <u>New Page</u>	<u>Remove</u> <u>Page</u>	<u>Add</u> <u>New Page</u>	<u>Remove</u> <u>Page</u>
a-2	a-2	U ae	U ae
1-3	1-3	U ae(1):U an-1.1	U ae(1):U an-1.1
y-1:y-2	y-1:y-2	U ax	U ax
y(Cond.)		U fz-1	U fz-1
ae-2	ae-2	U gp	U gp
ae(Cond.)	ae(Cond.)	U hc	U hc
an-1.3:an-1.4	an-1.3:an-1.4	U he(1.1):U he(2)	U he(1.1):U he(2)
an(2.1)	an(2.1)	U hw	U hw
an(3.1)	an(3.1)	U si-1	U si-1
an(3.2)	an(3.2)	GP-7	GP-7
ap-2	ap-2		
ax-1	ax-1		
bi	bi		
cg-4	cg-4		
cr	cr		
cy-1	cy-1		
cz	cz		
ea-1	ea-1		
ei	ei		
eq(1.1)	eq(1.1)		
fm	fm		
gb-1	gb-1		
gw-2:gx-1	gw-2:gx-1		
sb-1	sb-1		
sc-1	sc-1		
sc-2	sc-2		
se(Cond.)	se(Cond.)		
zz-1:zz-2	zz-1:zz-2		
zz-7	zz-7		

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APR 20 1982

a - Insulator, pin type

Specifications

5 kV - used on 2.4 kV and
2.4/4.16 kV systems



ANSI Class 55-2	Plain	Radio-freed
Flashover, dry	50 kV	45 kV
Flashover, wet	25 kV	25 kV
Leakage distance	5 in.	5 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1302*
Brown Boveri Elec.(ITE)	8
**McGraw-Edison	NP8D8*
Ohio Brass	12847
Porcelain Products (Knox)	253

7.2/12.5 kV - used on 7.2/12.5
and 7.62/13.2 kV systems



ANSI Class 55-3	Plain	Radio-freed
Flashover, dry	65 kV	55 kV
Flashover, wet,	35 kV	30 kV
Leakage distance	7 in.	7 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1303*
Brown Boveri Elec.(ITE)	5*
Joslyn (Pinco)	L63R*
McGraw-Edison	NP9D8*
Ohio Brass	38148*
Porcelain Products (Knox)	261-S*

15 kV - used on 7.2/12.5
and 7.62/13.2 kV systems where
greater insulation is needed



ANSI Class 55-4	Plain	Radio-freed
Flashover, dry	70 kV	65 kV
Flashover, wet	40 kV	35 kV
Leakage distance	9 in.	9 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1304*
Brown Boveri Elec.(ITE)	6*
Joslyn (Pinco)	L2064R*
McGraw-Edison	NP21D8*
Ohio Brass	38149*
Porcelain Products (Knox)	366-S*

*Radio-freed

**Available in white as indication of neutral. White insulators are non-radio-freed.

Radio-freed and non-radio-freed insulators made by these manufacturers and in these styles are acceptable.

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Forms 803 and 804 at the option of the owner.

January 1982

a - Insulator, pin type
(Radio-freed)SpecificationsUsed on 14.4/24.9 kV
distribution lines.Radio noise free, metal
thimble

ANSI Class 56-1

Flashover, dry 95 kV

Flashover, wet 60 kV

Leakage distance 13 in.

Pinhole diameter 1-3/8 in.

Chance	C906-1311
Brown Boveri Elec. (ITE)	127-R
Joslyn (Pinco)	L1123-R
Ohio Brass	38246-7010
Porcelain Products (Knox)	2027-S

Used on 33 - 34.5 kV
transmission lines.

Metal thimble



ANSI Class 56-3

Flashover, dry 125 kV

Flashover, wet 80 kV

Leakage distance 21 in.

Pinhole diameter 1-3/8 in.

Chance	C906-1303
Brown Boveri Elec. (ITE)	245-R
Joslyn (Pinco)	L75-R
Ohio Brass	38223-7010
Porcelain Products (Knox)	2045-S

Used on 44 - 46 kV
transmission lines.

Metal thimble



ANSI Class 56-4

Flashover, dry-wet 140-95 kV

Leakage distance 27 in.

Pinhole diameter 1-3/8 in.

Brown Boveri Elec. (ITE)	255-R
Ohio Brass	38255-7010

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Forms 803 and 804 at the option of the owner.

1 - Deadend for Steel Strand (Overhead Ground Wire)

TRANSMISSION

For High Strength Steel Strand and Aluminum-Clad Steel Strand

<u>Manufacturer</u>	<u>Clamp Type</u>		
	<u>High Strength Steel</u>	<u>Aluminum-Clad Steel</u>	
	<u>3/8" and 7/16"</u>	<u>7 No. 9 AWG</u>	<u>7 No. 8 AWG 7 No. 7 AWG</u>
Anderson/Sq. D	SWDE-55N		
Ohio Brass	80437		

1 - Deadend for steel strand (overhead ground wire)

TRANSMISSION

For high strength, extra high strength steel strand and aluminum clad steel strand

<u>Manufacturer</u>	<u>Compression Type</u>				
	<u>High strength steel</u> <u>3/8"</u>	<u>7 No. 9 AWG</u>	<u>Aluminum-clad steel</u> <u>7 No. 8 AWG</u>	<u>7 No. 7 AWG</u>	<u>Extra High Strength</u> <u>5/16" 3/8" 7/16"</u>
Fargo (Alcan)	82S712	82S714	82A78	82A77	82S710 82S712 82S714
Alcoa	4620.12	4627.14			
Burndy	YTW375E	YTW438E	YTW7M8T	YTW7M7T	

Somerset
Order by wire size
and type.

Formed Type

Chance		16M AWSBG	20M AWSBG
Helical Line Prod.	HG523-12.5M	HG525-16M	HG528-20M

Automatic Type

Fargo	GDE-302	GDE-303	GDE-302	GDE-303	GDE-301	GDE-302	GDE-303
Reliable	5202	5203	5202	5203			

y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

DISTRIBUTION GUY STRAND

Grade Size	Siemens Martin			High Strength (HS)				Extra High Strength (EHS)				
	1/4"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"
<u>Manufacturer</u>												
Alcan Cable	X	X	X	X			X	X	X			X
Armco Steel Corp.	X	X	X	X		X	X	X	X		X	X
Bethlehem Steel	X	X	X	X		X	X	X	X		X	X
CF&I	X	X	X	X		X	X	X	X		X	X
Cal-Wire	X	X	X	X		X	X	X	X		X	X
Davis Walker	X	X	X	X		X	X	X	X		X	X
Florida Wire and Cable	X	X	X	X		X	X	X	X		X	X
Indiana Steel and Wire	X	X	X	X		X	X	X	X		X	X
Paulsen Wire Rope Corp.	X	X	X	X			X	X	X			X
Seal Wire Co.	X	X	X	X			X	X	X			X
Southwire	X	X	X	X		X	X	X	X		X	X
Texstrand		X		X					X		X	
U. S. Steel	X	X	X	X		X	X	X	X		X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

TRANSMISSION GUY STRAND

Grade Size	High Strength (HS)			Extra High Strength (EHS)		
	1/4"	9/32"	5/16"	3/8"	7/16"	1/2"
<u>Manufacturer</u>						
Alcan Cable	X		X		X	X
Armco Steel Corp.	X		X		X	X
Bethlehem Steel	X		X		X	X
CF&I	X		X		X	X
Cal-Wire	X	X	X		X	X
Davis Walker	X	X	X		X	X
Florida Wire and Cable	X	X	X		X	X
Indiana Steel and Wire	X	X	X		X	X
Paulsen Wire Rope Corp.	X		X		X	X
Seal Wire Co.	X		X		X	X
Southwire	X	X	X		X	X
Texstrand	X				X	
U. S. Steel	X		X		X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Al-Zn Alloy Coated Steel Wire
 Applicable Specification: ASTM A785 (Classes 30 & 45)
 Condition of Acceptance - To obtain experience

Distribution Guy Strand

<u>Grade</u>	<u>Siemens Martin</u>			<u>High Strength</u>					<u>Extra High Strength</u>				
<u>Size</u>	1/4"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
Bethlehem Steel	X	X	X	X		X	X	X	X		X	X	

Transmission Guy Strand

<u>Grade</u>	<u>High Strength</u>					<u>Extra High Strength</u>				
<u>Size</u>	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
Bethlehem Steel		X		X	X		X		X	X

(Purchaser should specify class 30 or class 45)

ae - Surge Arresters, Distribution
(Lightning Arresters)

<u>Manufacturer</u>	<u>Type</u>	<u>Ratings, kV</u>	<u>Duty</u>
General Electric	Alugard	9, 10, 18	Heavy
Joslyn	Q	9/10, 18	Normal
	J	9/10, 18	Heavy
Kearney	Unigap	9, 10, 18	Heavy
McGraw-Edison	TS	9/10, 18	Normal
	TL	9, 10, 18	Heavy
Ohio Brass	DA-III	9/10, 18	Normal
	DA-IV	9, 10, 18	Heavy
Westinghouse	LV	9/10	Normal
	LVBB	9/10, 18	Heavy

NOTE: Only arresters with top gaps and without ground lead
disconnectors are acceptable.

ae-2
January 1982

ae - Surge Arresters, Substation*
(Lightning Arresters)

<u>Manufacturer</u>	<u>Type</u>	<u>Accepted Ratings - kV</u>	<u>Manufacturer's Classification</u>
General Electric	Alugard	3, 9, 10, 18	Distribution
Joslyn	2RS	9/10, 18	Distribution
	Q	3, 9/10, 18	Distribution
Kearney	Unigap	3, 9, 10, 18	Distribution
McGraw-Edison	ES	3, 9/10, 18	Distribution
	F3	9-120	Intermediate
	G	3-144	Station
Ohio Brass	GP	3-72	Intermediate
	MPA	3-15	Station
	MP	3-48	Station
	MPR	60-312	Station
	DA	3, 9, 10, 18	Distribution
Westinghouse	LV	3-20	Distribution
	IVL	3-120	Intermediate
	CPL	3-312	Station

*For instructions concerning application at substations refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

ae - Surge Arrester, Substation*

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u>		
Surge arrester, station class, metal oxide type, Tranquell, 2.7 kV thru 588 kV	1164 5/24/79	To obtain experience
Surge arrester, intermediate class, metal oxide type, Tranquell, 3 kV thru 120 kV	1197 10/9/80	To obtain experience
<u>Ohio Brass</u>		
Surge arrester, station class, metal oxide type, Dynovar, 52 kV thru 312 kV	1175 11/2/79	To obtain experience
<u>McGraw-Edison</u>		
Surge arrester, station class, metal oxide type VariSTAR 3 kV thru 192 kV Type ATZ1A	1223 11/19/81	To obtain experience

*For instructions concerning application at substation refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

af-1
July 1981

af - Cutouts, Distribution, Open

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Rating</u>
Chance	C	15, 27 kV
General Electric	9F34	15, 27 kV
Joslyn	Series 2	15, 27 kV
Kearney	HX (with or without loadbreak accessory)	15, 27 kV
McGraw-Edison	S1	15, 27 kV
S & C Electric	XS	15, 27 kV
Southern States	Series 66	15, 27 kV
	Series 70	15 kV
Westinghouse	NCX	15, 27 kV
	LBU-II	15, 27 kV

NOTE: The buyer should specify the load rating, voltage rating, interrupting rating and required accessories.

Cutouts used on underground riser poles should be load-break type or have hooks for portable load interrupters.

an - Transformers, distribution, pole type
Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

7.2/12.5 & 7.62/13.2	14.4/24.9	Dual Voltage
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NECO

Conventional, single bushing	NC	NCH
Self-protected, single bushing	NC-1	NCHCB

Type NC may also be obtained with double gap and internal fuse (NC-2) and with arrester and open link fuse (NC-3).

H. K. Porter (Delta-Star)

Conventional, single bushing	OS-B3	OS-B3	OS-B3
Self-protected, single bushing	OSP-B3	OSP-B3	OSP-B3
Conventional, two bushing	OS-A	OS-A	OS-A

Types OS-B3 and OS-A may also be obtained with internal fuse.

RTE

Conventional, single bushing	REA-Conv	REA-Conv	REA-Conv
Self-protected, single bushing	REA-CSP	REA-CSP	REA-CSP
Conventional, two bushing	REA-Conv	REA-Conv	REA-Conv

Conventional single bushing type may also be purchased with external overload protection and double gap and with bushing mounted cutout and lightning arrester.

Rural Electric Supply Cooperative

Conventional, single bushing	CONV
Conventional, two bushing	CONV
Self-protected, single bushing	CSP

The single bushing transformer may also be obtained with double gap and internal fuse (Type DG) or lightning arrester and external cutout (Type COLA).

Dead-front for use in enclosure:
Add "R" (Radial) or "LF"
(Loop Feed) to designation

an - Transformers, distribution, pole type
Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

	<u>7.2/12.5 & 7.62/13.2</u>	<u>14.4/24.9</u>	<u>Dual Voltage</u>
<u>United (Ky. AEC)</u>			
Conventional, single bushing	SC	SC	DSC
Conventional, two bushing	SC	SC	DSC
Self-protected, single bushing	SCP	SCP	DSCP

SC and DSC may be purchased with
external fuse and arrester (SP and DSP)

<u>VanTran</u>	
Conventional, single bushing	CR
Self-protected, single bushing	CSP-R
Conventional, two bushing	CD

<u>Westinghouse</u>			
Conventional, single bushing	S-B3	S-B3	S-B3
Self-protected, single bushing	CSP-B3	CSP-B3	CSP-B3
Conventional, two bushing	S-A	S-A	S-A

Type S-B3 may also be obtained
with internal fuse, with internal
fuse and double gap, and with
lightning arrester and open link
cutout (Type PC).

<u>Sesco</u>	
Conventional, single bushing	RU
Self-protected, single bushing	ESP
Conventional, two bushing	CONV

Type RU may also be purchased
with internal fuse and/or
lightning arrester.

an - Transformers, Power
 Single-Phase, Step-Down
 for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	kVA Capacity									
	167	250	333	500	833	1250	1667	2500	3333	5000
	<u>10,000</u>	<u>8333</u>	<u>6667</u>	<u>5000</u>	<u>3333</u>	<u>2500</u>	<u>1667</u>	<u>1250</u>	<u>833</u>	<u>500</u>

Kuhlman
34.4

S

McGraw-Edison

34.4
 43.8
 67.0

S S S S S S S S S S S

H. K. Porter
 (Delta-Star)

34.4
 43.8
 67.0
 115

S S S S S S S S S S S

RTE

34.4
 43.8

S S S S S S S S S S S

RTE-ASEA

67.0

S

an - Transformers, Power
Single-Phase, Step-Down
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary

• Voltage-kV

<u>167</u>	<u>250</u>	<u>333</u>	<u>500</u>	<u>833</u>	<u>1250</u>	<u>1667</u>	<u>2500</u>	<u>3333</u>	<u>5000</u>	<u>6667</u>	<u>8333</u>	<u>10,000</u>
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Westinghouse

34.4
43.8
67.0

S S S
S S S
S S S

an - Transformers, Power
 Three-Phase, Step-Down
 for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	kVA						MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
Central Moloney														
34.4														

Federal Pacific													
34.4													
67.0													
115													
138													

Transformers 5 MVA and larger also accepted as load tap changing transformers using Federal Pacific Type TC-546 load tap changers.

General Electric													
34.4													
43.8													
115													
138													

transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric Types LR72, LR65 and LRT-200 load tap changers.

an - Transformers, Power
Three-Phase, Step-Down
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kv	kVA						MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
Hevi-Duty														
34.4	S	S	X	S	X	X	X	X	S	S	X	S	S	S
43.8	S	S	S	S	S	X	X	X	X	X	X	S	S	S
67.0			X		X	X	X	X	X	X	X	X	S	S
115						X	X	X	X	X	X	X	S	S
138							S	S	X	S	S	S	X	S

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A and UTT-B and Siemens-Allis Type TLS load tap changers.

McGraw-Edison														
34.4	s		s				s	s	s	s	s	s	s	s
43.8	s		s				s	s	s	s	s	s	s	s
67.0	s		s				s	s	s	s	s	s	s	s

Transformers 5 MVA and larger also accepted as load tap changing transformers using McGraw-Edison Types 550, 550B and 550C load tap changers.

H. K. Porter														
(Delta-Star)														
34.4	s	s	s		s	X	X	X	s					
43.8			s	s	s	X	X	X	s	X				
67.0		s	X	s	X	X	X	X	s	X	X			
115						X	X	X	s	X	X			
138							s	s	s	s	s	s	s	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis Types TLS and TLH-21 load tap changers.

an - Transformers, Power
Three-Phase, Step-Down
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	kVA						MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
RTE														
34.4			S	S	X	X								
43.8			X	S	S	X	X							

RTE-ASEA

115
138

Transformers 5 MVA and larger also accepted as load tap changing transformers using RTE-ASEA
Type UZD load tap changers.

s
s
s

Sierra (RSE)

34.4
43.8
67.0

s
X
s
X
s
X
s
s
s

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse
Types UTS-A and UTT-B load tap changers.

ap - Clamp, hot line
ACSR with armor rods

Clamps listed below have spring action and enclosed thread chambers.
They are recommended for use in areas where severe corrosion or vibration trouble is experienced.

Conductor Size		4/0 & 3/0	2/0	1/0 & 2	4
	Tap Conductor				
<u>Anderson</u>	Aluminum	HLP-7	HLP-7	AH-4	AH-4
<u>Chance</u>	Aluminum	S1540-AA	S1540-AA	S1530-AA	S1530-AA
	Copper	S1540-AC	S1540-AC	S1530-AC	S1530-AC
<u>Fargo</u>	Aluminum	GH-102A	GH-102A	GH-101A	GH-101A
	Copper	GH-102AC	GH-102AC	GH-101AC	GH-101AC
<u>Weaver</u>	Aluminum	W-1066AA	W-1066AA	W-6336AA	W-6336AA
<u>Utilco</u>	Aluminum	-	HLC-397	-	HLC-40
<u>Penn Union</u>	Aluminum			HLCA-040	HLCA-040
	Copper			HLCA-040	HLCA-040

ar
July 1981

ar - Wireholder

Applicable Specification: "REA Specification for Service Wireholders," D-15

	<u>With #22 Wood Screw</u>	<u>With 3/8" x 5" Bolt</u>
Chance	3-11-44	-
Dixie	D3-11-44	-
Joslyn	J089	-
McGraw-Edison	DW1R1	-
Porcelain Products	1986	-
Universal Clay Products	415	-



Note: For triplex type service cable see clevis type wireholders on page "bt."

ax - Cutout and Arrester, Combination

Nominal System Voltage Cutout Max. Voltage Rating	For 12.5Y/7.2 kV		For 13.2Y/7.6 kV		For 24.9Y/14.4 kV	
	7.8 kV	15 kV	15 kV	27 kV	18 kV	27 kV
Application						
Cutout Current Rating Type	1Ø Trans. 50*	1Ø Sect. 100	3Ø Bank 3Ø Sect. 100	3Ø Bank 3Ø Sect. 1Ø Sect. 100	1Ø Trans. 50*	3Ø Bank 3Ø Sect. 1Ø Sect. 100
Manufacturer	Catalog Numbers					
Chance	Crossarm Transformer	C70J-2B63 Series	C70J-2F53 Series	C70J-2F53 Series	C70J-2L73 Series	
General Electric	Crossarm (L) Transformer	9F80	9F80	9F80	9F78A	9F80
Joslyn (valve) (valve) (valve)	Crossarm Transformer	J9237-Q6 J9238-1Q	J9237-Q2/R J9237-Q2/B/R	J9237-Q6 J9238-1Q	J9267-Q6 J9268-1Q	J9267-Q2 J9267-Q2/B
Kearney	Crossarm Transformer	294072	123511	123512	294074	123514
McGraw-Edison	Crossarm (L) Transformer	AFS800M010	AFS301B Series	AFS301C Series	AFS800M018	AFS300B Series

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

*These cutouts have open links and must not be used where fault currents are high or for sectionalizing.

(L) Indicates loadbreak type is available.

ax - Cutout and Arrester, Combination

Nominal System Voltage Cutout Max. Voltage Rating	For 7.2/12.5 kV Wye		For 7.6/13.2 kV Wye		For 14.4/24.9 kV Wye	
	7.8 kV	15 kV	15 kV	15 kV	50*	100
Application	For 1Ø Transformers & 1Ø Sectionalizing	For 3Ø Banks & 3Ø Sect.	For 1Ø Trans. & 1Ø Sect.	For 3Ø Banks & 3Ø Sect.	For 1Ø Trans. & 1Ø Sect.	For 3Ø Banks & 3Ø Sect.
Cutout Current Rating	50*	100	50*	100	50*	100
Manufacturer Type Mounting	Catalog Numbers					
Westinghouse Crossarm Electric Corporation Crossarm (L)	7.8 NCX/ 9 LVG 7.8 LBU-II/ 9 LVG	15 NCX/10 LVG 15 LBU-II/10 LVG	15 NCX/10 LVG 15 LBU-II/10 LVG	15 NCX/10 LVG 15 LBU-II/10 LVG	24.9 NCX/ 18 LVG 24.9 LBU-II/ 18 LVG	

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

*These cutouts have open links and must not be used where fault currents are high or for sectionalizing.

(L) Indicates loadbreak type is available.

bh
July 1981

bh - Clevis, Service Deadend

Applicable Specification: "REA Specification for Service Deadend
Clevises," D-8

<u>Manufacturer</u>	<u>Clevis Only*</u>	<u>Clevis with dry process spool</u>	<u>Clevis with wet process spool</u>
Chance	0341	0341-0606	0341-C909-1931
Dixie	D0341	D0341-D	D0341-W
Joslyn	J0313	J0314	-
Kortick	K9250	K9100	K9099
McGraw-Edison	DC3F1	-	-
Utilities Service	32136	31136	36136

*Catalog number does not include spool; for spool see Page cm.

bi
January 1982

bi - Gain, pole

For use with rectangular crossarms

Chance	4092
Continental	CAG-44-5
Flagg (MIF)	PX252
Joslyn	J4092

For braceless crossarms (narrow profile construction)

Bethea/National	GCAF-6A
Continental	DEA-65-10A
Flagg (MIF)	PX182A
Lapp	304065

Transmission

Grid Gains

	Sizes in inches	
	<u>4" x 4"</u>	<u>4½" x 9"</u>
Barron Bethea	PG-44	PG-945
Bethea/National	GSF-44-7	GSFT-95-7
Continental	GGSF-4040-7	GRF-9045-7
Flagg (MIF)	PX122	PX260
Joslyn	J6064	J22533-A
Lapp (Line Ware)	304067	304070

cg - Switch, air, three-pole, group-operated
(Factory Preassembled)

<u>Manufacturer</u>	<u>Acceptable Mounting on Structures</u>	<u>Vertical Break Type kV</u>	<u>Side Break Type kV</u>
Chance	Horizontal (A)		D4,D5(L)15-27
	Phase over		
	phase (A)		D4,D5(L)15-27
	Vertical (A)		D4,D5(L)15-27
	Horizontal (B)		D4,D5(L)34.5 (200 kV BIL)#
	Phase over		
	phase (B)		D4,D5(L)34.5 (200 kV BIL)#
	Vertical (B)		D4,D5(L)34.5 (200 kV BIL)#
S & C	Horizontal (A)		Alduti(L)15-25
	Phase over		
	phase (A)		Alduti(L) 25
	Vertical (A)		Alduti(L)15-25
	Phase over		
	phase(B)	Alduti (L) 34.5 (200 kV BIL)#	Alduti (L) 34.5 (200 kV BIL)#
	Vertical (B)	Alduti (L) 34.5 (200 kV BIL)#	

(L) Means gas or solid material full-load interrupters are accepted and available.

Accepted for transmission use only, provided the steel crossarm base is grounded with an adequate grounding connector.

(A) Not suitable for substation use.

(B) NEMA standard switches for station and line structures.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods, except as otherwise noted.

cg - Switch, air, three-pole, group-operated

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Southern States</u>		
"Pole-Pak" 15-23 kV	800 8/20/64	To obtain experience.
Type EV, horizontal mounted, vertical break, 15-230 kV 600-1200 amp.	859 2/9/67	To obtain experience.
Type ES; 15, 23 and 34.5 kV (horizontal upright models only)	897 7/11/68	1. To obtain experience. 2. For 15 kV and 23 kV distribution lines: insulated interphase and control rod spacers required. See REA Drawings M3-15 and VM3-16. 3. NEMA insulators and steel interphase base required for transmission line structure as in TM-3. 4. Acceptable on steel sub- stations 15 through 34.5 kV with NEMA insulators and uninsulated interphase rods.
Type 57L sidebreak, 115-161 kV, 600 and 1200 amp., horizontal upright	1067 6/12/75	To obtain experience.
<u>H. K. Porter</u>		
Type MK-40A 15 kV thru 230 kV (horizontal upright mounting)	912 2/20/69	1. To obtain experience. 2. Insulated interphase and control rods required on 15 kV and 23 kV models used on wood structures. 3. Steel interphase base required when mounted as in REA Drawing TM-3.

cq
July 1981

cq - Deadend, Secondary

(For use on secondary deadends only)

Copper
Offset Compression

Conductor Size:	4	6
National Telephone Supply	91-204-P	91-162-J

Copperweld-Copper
Offset Compression

Conductor Size:	6A	8A
National Telephone Supply	91-6A-P	91-8A-P



Copperweld-Copper
Automatic Deadend

Conductor Size:	6A	8A
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cr
January 1982

cr - Bracket, Angle Suspension

Applicable Specifications: "REA Specification for Angle Suspension
Brackets," DT-4

<u>Manufacturer</u>	<u>Distribution</u> <u>5/8"Dia.</u>	<u>Transmission</u> <u>3/4"Dia.</u>
Chance		5728
Joslyn	J7935	J7936
Kortick	K6231	K6230
McGraw-Edison	DC8E1	DC8E2
Utilities Service	545	546

Angle Bracket, Swinging

Applicable Specification: T-8
Drawing : TM-111A, TM-111B

Swinging angle bracket with hardware and
fittings (for 230 kV transmission)

<u>Manufacturer</u>	<u>TM-111A</u>	<u>TM-111B</u>	<u>Type #1</u>	<u>Type #2</u>
American Crossarm & Conduit Company	AC8801	AC8802	X	X
Brooks	64233A	64233B	X	
Hughes	2848	2848	X	X
Joslyn	REA 64-8A	REA 64-8B	X	

cy - Splice, Compression
ACSR

<u>Conductor Size</u>	<u>AMP</u>	<u>Alcoa</u>	<u>Anderson/ Sq. D</u>	<u>Burndy</u>
4 6/1		2-piece	VC-36R	"Unisplice"
4 7/1		Order	VC-36R	(1-piece)
2 6/1		by	VC-36R	or Y-S
2 7/1		Conductor	VC-36R	(2-piece)
1/0		Size	VC-50R	Order by
2/0		and	VC-50R	Conductor
3/0		Stranding	VC-61R	Size and
4/0		"	VC-61R	Stranding
266.8 kcmil 26/7		2-piece	VC-831-1-RM	2-pc.
336.4 kcmil 26/7		Compression	VC-831-1-RM	Type YTS
477 kcmil 26/7	Type SP	Alloy (Order	VC-832-2-RM	"
556.5 kcmil 26/7	(Order by	by Conductor	VC-833-3-RM	"
795 kcmil 26/7	Conductor Size	Size and	VC-835-4RM	"
954 kcmil 54/7	and Stranding)	Stranding)	VC-835-4RM	"

<u>Conductor Size</u>	<u>Fargo</u>	<u>ITT Blackburn</u>	<u>Kearney</u>
4 6/1		Type RC	OH4-61A
4 7/1		1-piece	OH4-71A
2 6/1		Order	OH2-61A
2 7/1		by	OH2-71A
1/0		Conductor	OH1/0-61A
2/0		Size	OHR2/0-61A
3/0		and	OHR3/0-61A
4/0		Stranding	HR4/0-61A
266.8 kcmil 26/7	TJA-1109	Type DT	HR-266-267A
336.4 kcmil 26/7	TJA-1309	2-piece	HR-336-267A
477 kcmil 26/7	TJA-1809	for	HR-477-267A
556.5 kcmil 26/7	TJA-2209	kcmil sizes	HR-556-267A
795 kcmil 26/7	TJA-3309		
954 kcmil 54/7	TJA-4121		

<u>Conductor Size</u>	<u>Nat. Tel. Supply</u>	<u>Somerset/ Homac</u>
4 6/1	"Nicopress"	"Tension
4 7/1	(1-pc. or 2-pc.)	splicer"
2 6/1	Order by Conduc-	(1-piece or
2 7/1	tor Size and	2-piece)
1/0	Stranding	Order by
2/0	2-pc.	Conductor
3/0	"	Size and
4/0	"	Stranding
266.8 kcmil 26/7	"	2-pc.
336.4 kcmil 26/7	"	"
477 kcmil 26/7	"	"
556.5 kcmil 26/7	"	"
795 kcmil 26/7		
954 kcmil 54/7		

cy-1.1
July 1981

cy - Splice, Compression

Copper and Copperweld-Copper

<u>Conductor Size</u>	<u>Anderson/ Sq. D.</u>	<u>Burndy</u>	<u>Kearney</u>	<u>Nat. Tel. Supply</u>
6 cu	VCC-28	YDS6W	OH6C	1-162/J
4 cu	VCC-28	YDS4W	OH4C	1-204/P
2 x 3 cu	-	YDS2C-3	OH2-3CX	1-258/3X
0 x 7 cu	-	YDS25	OH1-7C	1-325/7F6
8A CWC	VCC-28	YDS8KT	OHR8ACW	1-8A-P
6A CWC	VCC-28	YDS6KT	OHR6ACW	1-6A-P
4A CWC	VCC-37	YDS4KT	OHR4ACW	1-4A-X
2A CWC	VCC-43	-	-	-

<u>Conductor Size</u>	<u>Somerset/ Homac</u>
6 cu	J2C3
4 cu	L2C5
2 x 3 cu	S2C7
0 x 7 cu	U2C9
8A CWC	L2E1
6A CWC	L2E3
4A CWC	Q2E5
2A CWC	U2E7

cz - Splice for Steel Strand (Overhead Ground Wire)

Compression

Single Sleeve Only

	<u>High Strength Steel</u> <u>3/8" 7/16"</u>	<u>Extra High Strength</u> <u>3/8" 5/16" 7/16"</u>	<u>Aluminum Clad Steel</u>		
			<u>7 No. 9 AWG</u>	<u>7 No. 8 AWG</u>	<u>7 No. 7 AWG</u>
Alcoa		4914.386	4916.453		
Burndy	YTS375E	YTS438E		YDS7M8T	YDS7M7T
Fargo	81390	81468	81390 81344	81468	81468
Kearney	HR-3/8-3-7S				
National Tel. Supply	5-7/120G92	5-7/145J22			
Somerset/Homac	29714				

Steel and Aluminum Sleeves

Somerset/Homac	29714 & 28414 (Two piece)		
Reliable	5002	5003	
Electroline	GD-537		
Helical Produ	HS-310-3/8"	HS-311-7/16"	

Automatic

Bolted Type

Formed Type

da
July 1981

da - Bracket, insulated

	<u>Bracket without Insulator</u>	<u>Bracket with 1-3/4" Spool Insulator</u>	<u>Bracket with 3" Spool Insulator</u>
Chance	0327	0327-C909-1032	0327-C909-1034
Dixie	D0327	-	-
Joslyn	J1300	J1301	J1303
Kortick	K9278	K9081	K9082
McGraw-Edison	DC2C1	-	-
Hughes	1077LI	1077SI	1077I

ea - Insulator, post type

DISTRIBUTION

System voltage, kV	7.2/12.5	7.2/12.5	14.4/24.9
Leakage, inches	7½	10	15
Flashover, dry, kV	65	70	95
Flashover, wet, kV	<u>40</u>	<u>50</u>	<u>65</u>

Chance

Insulator only - order
stud separately (Aluminum
base, also available with
malleable iron base)

C903-1900	C903-1901	C903-1902
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Lapp

7" Stud
1-3/4" Stud

4415P	4420P	4427P
4315P	4320P	4327P

Ohio Brass

7" Stud
1-3/4" Stud

43400-3040	43401-3040
43400-3010	43401-3010

TRANSMISSION

System voltage, kV	22	34.5	46
EEI-NEMA Class	57-2	57-3	57-4
Flashover, dry, kV	110	125	150
Flashover, wet, kV	<u>85</u>	<u>100</u>	<u>125</u>

Chance

Insulator only - order
stud separately

C903-1002	C903-1003
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Lapp

7" Stud
1-3/4" Stud

9435P	9445P	9455P
9335P	9345P	9355P

Ohio Brass

7" Stud
1-3/4" Stud

37620-7040	41640-7040	41650-7040
37620-7010	41640-7010	41650-7010

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Forms 803 and 804 at the option of the owner.

ea-2
July 1981

ea - Insulators, horizontal post type

<u>Manufacturer</u>	<u>34.5 kV</u>	<u>69 kV</u>	<u>115 kV</u>
Brown Boveri Electric (ITE)	62356	-	-
Lapp	F-4745	F-4788	F-70147
Ohio Brass	43740	43790	47043

eh
July 1981

eh - Hook, ball

<u>Manufacturer</u>	<u>Catalog No.</u>
Anderson Elec./Square D	HB-30
Bethea/National	BH-5
Continental Electric Company	BH-30-5
Brown Boveri Electric (ITE)	3001
Joslyn (Brewer-Titchener)	3001-HT
Knox	3001
Lapp	7055
Ohio Brass	78420

ei - Clamps, suspension with socket eye

ACSR with Straight or Formed Armor Rods

	AWG		kcmil		
	1/0 & 2/0	3/0	4/0	477	556.5
Iron or Steel Clamps					
Anderson	MS-82-S	-	MS-104-S	-	-
Barron Bethea	FGW-4S	-	-	-	-
Bethea/National	FS-83-S	-	-	-	-
Brown Boveri Electric (ITE)	6203	6204	6204	6255	6257
Joslyn	6203	6204	6204	6255	6257
(Brewer-Titchener)					
Knox	6203A-U	6204A-U	6204A-U	6255A-U	6257A-U
Lapp	305743S	-	-	-	-
Ohio Brass	83085	83105	83105	83125	83145

ACSR with Straight or Formed Armor Rods

	AWG		kcmil		
	1/0 & 2/0	3/0 & 4/0	477	556.5	954
Aluminum Alloy Clamp					
Anderson	HAS-85-S	HAS-104-S	HAS-104-S	HAS-118-S	HAS-139-S
Bethea/National	LS-1-S	LS-2-S	LS-2-S	LS-3-S	LS-4-S
C & R	CRSC-1S	CRSC-2S	CRSC-3S	CRSC-3S	CRSC-3S
Dulmison	-	AGS	AGS	AGS	AGS
Brown Boveri Electric (ITE)	9503-U	9504-U	9504-U	9505-U	9506-U
Joslyn	9503-S	9504-S	9504-S	9505-S	9506-S
(Brewer-Titchener)					
Knox	9503-U	9504-U	9504-U	9505-U	9506-U
Lapp	306029S	306030S	306030S	306031S	306032S
Ohio Brass	87085	87105	87105	87115	87135
*Preformed	-	AGS	AGS	AGS	AGS

*Cleviss type available.

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

METAL BRACKETS

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Lapp</u> Single post insulator bracket, 304031-G	1104 12/16/76	1. To obtain experience. 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected.
<u>Western Power Products</u> Single post insulator bracket, HDB-200-R, for 7.2/12.5 kV construction only	1152 12/7/78	Same as above.
<u>Bethea/National</u> Single post insulator bracket, HBF-10-9-GC Standoff bracket VIB3-18-GC	1156 2/1/79 1213 6/4/81	Same as above.
<u>Anderson/Sq. D</u> Standoff bracket COB-E-180-TGL	1180 1/31/80	Same as above.
<u>Dixie</u> Deadend Bracket assembly D21142 for 12.5/7.2 kV	1220 10/8/81	Same as above.
Deadend bracket assembly D21144 for 24.9/14.4 kV		

Conditional List
eq(2)
July 1981

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Shakespeare</u>		
Two-phase angle bracket 761-36-8	1032 12/20/73	1. To obtain experience.
Two-phase pin bracket 813-36		2. For use only in scenic areas and locations where right-of-way is limited.
Standoff insulator, 560-13		
Standoff insulator, 560-18		
Suspension bracket, 615-18		
Deadend arm, 540-36	1063(4/17/75)	3. Not to be used where conductor galloping may be expected.
Standoff bracket, 892-18	1089(4/29/76)	
		4. Not to be used in con- taminated atmospheres.
<u>Chance</u>		
Two-phase pin bracket C653-0638	1043 6/13/74	Same as above.
Standoff insulator C653-0621		
Deadend arm C653-1023	1049(9/5/74) 1141(6/15/78)	
Two-phase angle bracket C653-1003	1061 3/20/75	
<u>Continental</u>		
Two-phase pin bracket GPB2-568M-36V	1181 2/14/80	Same as above.
Two-phase angle bracket GPB2-568M-36E		
Standoff insulator GPB-58M-13		
Standoff insulator GPB-58M-18		
Deadend arm GDEA-58-3.0-36-2E		
Suspension bracket GPB-58M-18E		

fj - Bracket, extension

(For use in mounting oil circuit reclosers or sectionalizers)
See Drawing VM3-10A

	<u>Through Bolt Type</u>	<u>Band Type</u>
Aluma-Form	TBRSM-1, TB2M1-6*	RSM-1
Dixie	D-2359-M	
Joslyn	J2357M	
McGraw-Edison	DR2E3	

*For mounting double lug reclosers.

fk - Bracket, oil circuit recloser or sectionalizer

(For cluster mounting of three oil circuit reclosers on pole)

Aluma-Form	653-9*
*McGraw-Edison	DT8C1
Turner	695-3

*Suitable for 14.4 and heavy duty 7.2 kV.

fl - Rack, primary metering

(For cluster mounting of primary metering equipment on pole)

Aluma-Form	PMM Series
Turner	3CT-PT

fm
January 1982

fm - Bracket, Arrester and Pothead Extension

For Distribution Arrester and Cutout - Pole Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		1HCA-18 Series	R3CA-48
Anderson/ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL	
Bethea/National	12.5/7.2 kV 24.9/14.4 kV	VIB3-12F-GC VIB3-18-GC	
Chance		C653-1038	C653-1056
Continental	12.5/7.2 kV 24.9/14.4 kV	IACB-12-5LGE IACB-18-5LGE	GPB-3-0-568M-3012-CAT 12 GPB-3-0-568M-4017-CAT 12
Dixie	12.5/7.2 kV 24.9/14.4 kV	D-1580 D-1583	D27211-G
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613H PA619H	
Lapp	12.5/7.2 kV 24.9/14.4 kV	304036-G 304038-G	
McGraw-Edison		DC34B3	
Power Line Hardware	12.5/7.2 kV	CA-12-3GL	
Shakespeare		892-18	670-40

For two distribution arresters in parallel or one
arrester and cutout - crossarm mounted

<u>Manufacturer</u>	<u>Catalog No.</u>
McGraw-Edison	DM23B2

For Intermediate Arrester Mounting

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form	WBMA-1	R3CSA-48

July 1981

ga - Watthour and Watthour-Demand Meters

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Sangamo</u> Socket base, 3 wire 1Ø watthour meter, Type J4ES, Class 320	1103 12/2/76	1. To obtain experience. 2. To be used only where Class 320 meters are permitted by local regulatory bodies. 3. To be used only with sockets rated for Class 320 service.

gb - Meter Sockets

<u>Manufacturer</u>	<u>Type or Catalog Number</u>		<u>No. Jaws</u>	<u>Rating, Amps.</u>
	<u>Ring</u>	<u>Ringless</u>		
Anchor #	1000 Class	1005 Class	4, 5, 6	100
	1006 "	-	4, 5, 6	100
	1100 "	1108 "	4, 5, 6	150
	1201 "	1206 "	4, 5, 6	200
	1202 "	1207 "	4, 5, 6	200
	-	1209 "	4, 5, 6	200
	-	1240 "	4, 5, 6	200
	1208 "	-	4, 5, 6	200
	1250 "	1255 "	4, 5, 7	200
	-	1300 "	4, 5, 7	200 HD
	1405 "	1406 "	4, 5, 7, 8, 13	20/100
	1510 "	1512 "	4, 5	100 per sta.
	1520 "	1525 "	4, 5	125 per sta.
	1530 "	1535 "	4, 5	150 per sta.
	1540 "	1545 "	4, 5	200 per sta.
	1470 "	1471 "	4, 5, 6, 7, 8, 13	20/100
(Conversion)	1655 "	1655 "	6, 8, 13 & "A"	200/400
	-	1650 "	5, 7	200
Crouse-Hinds (Arrow-Hart/ Murray)	SJ Series* (Single)	RJ Series* (Single)	4, 5 & 6	100
	SD Series* (Mult.)	RD Series* (Mult.)	4, 5 & 6	125 per sta.
	SN Series* (Single)	RN Series* (Single)	4, 5 & 6	100
	SS Series* (Single)	RS Series* (Single)	4, 5 & 6	200
		RH Series* (Single)	5 & 7	200 HD

#Available with UL label
* UL label

gw - Crossarm Assembly for H-frame Construction
(Double Arm) 230 kV (Small Angle)

Applicable Specification: REA Specification T-8
Drawing : TH-231B

Assembly complete with attaching hardware, fittings, bolts and braces.

Crossarm 3-5/8" x 9-3/8"

<u>Manufacturer</u>	<u>Catalog No.</u>
American Crossarm & Conduit (1)	8026VB
Brooks (1, 2)	64231
Cascadian (1)	CCC231B82
Hughes (1,2)	C-3338-B
Koppers (1)	REA-230B

Crossarm 5-1/8" x 7-1/2"

Hughes (1,2)	C-3338-BL
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1 - Fixed spacer fitting sizes as required.

2 - Adjustable spacers are available.

gx-1

January 1982

gx - Single Pole Steel Structures with Arms

Applicable Specification: REA Specification for Single Pole Steel
Structures Complete with Arms, T-9

Manufacturer

Type

Meyer

Single circuit,
delta conductor
arrangement - Type 1
Single circuit,
vertical conductor
arrangement - Type 2
Double circuit conductor
arrangement - Type 3
Single circuit, large angle
arrangement - Type 4

Union Metal

Single circuit,
delta conductor
arrangement - Type D
Single circuit,
vertical conductor
arrangement - Type E
Double circuit conductor
arrangement - Type H
Single circuit, large angle
arrangement - Type K

sb - Switch, disconnect (single-pole, hook-operated station class)

NEMA standard switches for station or line
structure use where single-pole switching is permissible

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Ratings</u>	<u>System Voltages Line-to-Line</u>
ANIXTER Royal	BT	15 thru 69 kV	12.5 thru 69 kV
	BLT(PL)	15 and 23 kV	12.5 thru 24.9 kV
Bridges	EH	15 thru 69 kV	12.5 thru 69 kV
	EHL(L)	15 thru 34.5 kV	12.5 thru 34.5 kV
Brown Boveri Elec. (ITE)	HPL	15 thru 69 kV	12.5 thru 69 kV
	DS(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
Hi-Voltage (Joslyn)	HU	15 thru 69 kV	12.5 thru 69 kV
	HI	15 thru 69 kV	12.5 thru 69 kV
Johnson	HPT	15 thru 69 kV	12.5 thru 69 kV
Kearney	M-72(PL)	15 thru 69 kV	12.5 thru 69 kV
McGraw-Edison	D2(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
MEMCO	STV	15 thru 69 kV	12.5 thru 69 kV
	STU	15 thru 69 kV	12.5 thru 69 kV
Morgan	DHS	15 thru 69 kV	12.5 thru 69 kV
	(PL included in 15 kV)		
H. K. Porter (Delta-Star)	B-2M	15 thru 69 kV	12.5 thru 69 kV
	EV(PL)	15 thru 34.5 kV	12.5 thru 34.5 kV
S & C	LBD(PL)	15 thru 34.5 kV	12.5 thru 34.5 kV
	Alduti(L)	15 and 25 kV	12.5 thru 24.9 kV
Seeco	BT	34.5 thru 69 kV	34.5 thru 69 kV
Siemens-Allis	HA	15 thru 69 kV	12.5 thru 69 kV
	HS(PL)	15 and 25 kV	12.5 thru 24.9 kV

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available.

sb-2

July 1981

sb - Switch, disconnect (single-pole, hook-operated station class)

NEMA standard switches for station or line
structure use where single-pole switching is permissible

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Ratings</u>	<u>System Voltages Line-to-Line</u>
Southern States	PBO	15 thru 69 kV	12.5 thru 69 kV
	*PBN	15 thru 23 kV	12.5, 13.2, 24.9 kV
USCO	HH(PL)	15 thru 69 kV	12.5 thru 69 kV

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available.

* With steel base only.

sb - Switch, disconnect (single-pole, hook-operated
distribution class)*

For distribution line use where power class insulation is not required
and single-phase switching is permissible.

(Not suitable for substation use)

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Rating</u>	<u>System Voltage Line-to-Line</u>
ANIXTER Royal	BLT(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
Chance	M3(PL)	15 and 27 kV	12.5 thru 24.9 kV
Brown Boveri Elec. (ITE)	DS(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
Kearney	D-73(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
McGraw-Edison	D2(PL)	15 and 25 kV	12.5, 13.2, 24.9 kV
Morgan	DHS (PL included in 15 kV)	15 and 23 kV	12.5, 13.2, 24.9 kV
H. K. Porter	EV(PL)	15 kV	12.5 kV
S & C	LBD(PL)	15 and 25 kV	12.5, 13.2, 24.9 kV
Siemens-Allis	HD(PL)	15 and 25 kV	12.5 thru 24.9 kV

NOTE: Switches on this page must be furnished with four bolts for
double crossarm mounting.

(L) Means solid material load interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available.

(LV) Means vacuum interrupters are available and accepted.

*Steel bases only.

sc - Regulators, Voltage
12.5/7.2 kV
13.2/7.62 kV

Applicable Specification: REA "Specification for Substation Regulators,"
S-2

<u>Type</u>	<u>Size</u>	<u>Description</u>
<u>General Electric</u>		
VR-1	38.1 - 509 kVA	(SL) Single phase - step type
MLT	500 - 1000 kVA	(S) Three phase - step type
VML-32	500 - 833 kVA	(S) Single phase - vacuum step type
VMLT-32	1200 - 2800 kVA	(S) Three phase - vacuum step type
<u>McGraw-Edison</u>		
RSAA	19.1 - 500 kVA	(SL) Single phase - step type
RAB	50 amp.	(L) Single phase - step type (Auto-Booster)
<u>Siemens-Allis</u>		
JFR	38.1 - 667 kVA	(SL) Single phase - step type
<u>Westinghouse</u>		
UTS, UTT	167 - 1000 kVA	(S) Three phase - step type

(L) Indicates line use
(S) Indicates substation use

sc - Regulators, Voltage
24.9/14.4 kV

<u>Type</u>	<u>Size</u>	<u>Description</u>
<u>General Electric</u>		
VR-1	72 - 576 kVA	(SL) Single phase - step type
VML-32	500 - 833 kVA	(S) Single phase - vacuum step type
VMLT-32	1200 - 4666 kVA	(S) Three phase - vacuum step type
<u>McGraw-Edison</u>		
RSAA	72 - 667 kVA	(SL) Single phase - step type
RAB	50 amp.	(L) Single phase - step type (Auto-Booster)
<u>Siemens-Allis</u>		
JFR	72 - 833	(SL) Single phase - step type

(L) Indicates line use
(S) Indicates substation use

Conditional List
sc

July 1981

sc - Regulators, Voltage

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Siemens-Allis</u> Three-phase, step-type substation regulator Type SFR (13.2/7.62 kV)	657 11/24/58	To obtain experience.
<u>General Electric</u> Three-phase, step-type substation regulator Type TMLT-32 (13.2/7.62 kV)	723 9/28/61	To obtain experience.

se - Voltage Transformers

Outdoor Types

<u>Manufacturer</u>	<u>.6kV</u>	<u>1.2kV</u>	<u>15kV</u>	<u>25kV</u>	<u>34.5kV</u>	<u>69kV</u>
Associated Engineering	CL TL		PTT-150 SPOF-100 PTT-110	PTT-150 SPOF-150	POF-200	
Duncan	DVE-6 DVF-6					
General Electric	JVA-0 JVP-0		JVW-5 JVW-110	JVW-6 ET-150 JVT-150	JVW-7 ET-200 JVT-200	ET-350 JVT-350
Sangamo	T6A T7		SMP-150			
Westinghouse	PPM		VOG-11 VOZ-11	PTOM-150 APT-150	APT-200	APT-350 LPT-350

NOTE: The transformer types listed above are acceptable in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

Conditional List

se

January 1982

se - Voltage transformers

Outdoor Types

<u>Manufacturer</u>	<u>Meeting No. & Date</u>	<u>Conditions</u>
<u>Astra</u>		
Type DB, 0.6 kV	1087	To obtain experience.
Type DA, 0.6 kV	4/1/76	
<u>Electromagnetic Industries</u>		
		To obtain experience.
Type U-2-350, 69 kV	1216(7/23/81)	
Type PO4-110, 15 kV	1076	
Type PO5-150, 25 kV	10/30/75	
Type PO4-200, 34.5 kV	1222(11/5/81)	
Type U-450, 0.6 kV	1080(12/23/75)	
<u>Balteau Standard</u>		
VE02-110, 15 kV	1212	To obtain experience.
VE05-110, 15 kV	5/21/81	

zz - Poles

Applicable preservatives: Creosote, pentachlorophenol-petroleum and waterborne salts (ACA and CCA)

(Firms listed on pages zz-1 through zz-7 are also qualified to treat crossarms. Crossarms should be fabricated at one of the plants listed on page g-1 or g-2.)

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Alabama Wood Treating Corp.	-	Mobile, Ala.
American Creosote Works, Inc.	-	Jackson, Tenn. Louisville, Miss. Pensacola, Fla.
American Crossarm & Conduit Co.	-	Chehalis, Wash.
American Wood	-	Richton, Miss.
Arkwood	-	Omaha, Arkansas
Atlantic Wood Industries, Inc.	-	Portsmouth, Va. Savannah, Ga. Vidalia, Ga. Fruitland, Md.
Baldwin Pole & Piling Co.	-	Bay Minette, Ala.
J. H. Baxter & Co.	Eugene, Ore.	Eugene, Ore. Long Beach, Calif. The Dalles, Ore. Arlington, Wash. Weed, Calif. Laramie, Wyo.
Benton Creosoting Co. (Kennedy Saw Mills)	-	Benton, La.
Broderick Wood Products Co.	-	Denver, Colo.
Brown Wood Preserving Co.	-	Brownville, Ala. Louisville, Ky.
Burke-Parsons-Bowlby Corp.	-	Leland, N. C.
Cascade Pole Co.	-	Tacoma, Wash.
	-	Olympia, Wash.

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Cowboy Timber Treating, Inc.	-	Manderson, Wyo.
Colfax Creosoting Co.	-	Pineville, La.
Conroe Creosoting Co.	-	Conroe, Texas
Crown Zellerbach Corp.	-	Gulfport, Miss. Mobile, Ala. Urania, La. Sallisaw, Okla.
Dant & Russell, Inc.	-	North Plains, Ore.
Davis Timber Company, Inc.	Hattiesburg, Miss.	Hattiesburg, Miss.
Dierks Div., Weyerhaeuser Co.	-	DeQueen, Ark.
El Dorado Pole & Piling Co., Inc.	-	El Dorado, Ark.
Eppinger and Russell	-	Chesapeake, Va.
Escambia Treating Co.	-	Brunswick, Ga. Pensacola, Fla. Camilla, Ga. Brookhaven, Miss.
Fernwood Industries	-	Fernwood, Miss.
Fordyce Wood Treaters, Inc.	-	Fordyce, Ark.
Garland Creosoting Company	-	Longview, Texas
Hart Creosoting Company	-	Jasper, Texas
Edward Hines Lumber Company	-	Mena, Arkansas
Hoosier Treating Company	-	Gosport, Ind.
Huxford Pole & Timber Co., Inc.	-	Huxford, Ala.

zz - Poles

Thermal (Non-Pressure) Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
J. H. Baxter & Co.	-	Arlington, Wash.
Bell Lumber & Pole Co.	-	Minneapolis, Minn.
Ted Butcher, Inc.	-	Sandpoint, Idaho
Cascade Pole Co.	-	Tacoma, Wash.
Cedar Service, Inc. (R. G. Haley and Co., Inc.)	-	Bemidji, Minn.
Idaho Pole Co.	Bozeman, Mont.	Bozeman, Mont.
Kalispell Pole & Timber Co.	-	Kalispell, Mont.
MacGillis and Gibbs Co.	-	Minneapolis, Minn.
L. D. McFarland Co.	Eugene, Ore. Sandpoint, Idaho	Eugene, Ore. Sandpoint, Idaho
Oeser Cedar Co.	-	Bellingham, Wash.
Page & Hill Forest Products	-	Big Falls, Minn.
Poles Incorporated	-	Newport, Wash.

PART II

Underground Distribution Equipment

The realm of underground distribution has made quite significant advances in the past few years. Due to these advances and the increasing feasibility of underground rural distribution, most REA borrowers have placed some distribution equipment underground, are presently planning to, or are anticipating doing so in the future. If borrowers are to obtain reliable and economical underground systems, approved standards for construction and equipment must be observed.

Underground equipment considered suitable is being included in the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers." Specifications have been written and are available on much of this equipment. It must be realized that very little operating experience is available on this type equipment. Therefore, much of the underground equipment will be listed as "Conditional" until such experience is obtained that will warrant removing the "Conditional" listing. Listing of an item as "Conditional" does not mean that the item is inferior. Conditional means that service experience is desired so the item can be properly evaluated and demonstrates satisfactory performance before consideration for final acceptance.

Any comments or suggestions regarding the use or operation of the listed underground equipment will be welcome.

U ae - Surge Arresters, Distribution
for Underground System Pole Risers
(Lightning Arresters)

<u>Manufacturer</u>	<u>Arrester Class</u>	<u>Arrester Type</u>	<u>Ratings - kV</u>
General Electric	Distribution, heavy duty	Alugard	9, 10, 18
	Intermediate	Alugard	9, 10, 18
Joslyn	Distribution, normal duty	Q	9/10, 18
	Distribution, heavy duty	J	9/10, 18
	Intermediate*	2RS	9/10, 18
Kearney	Distribution, heavy duty	Unigap	9, 10, 18
McGraw-Edison	Distribution, normal duty	ES	9/10, 18
	Distribution, heavy duty	EL	9, 10, 18
	Intermediate	RP2	9/10, 18
Ohio Brass	Distribution, normal duty	DA-III	9/10, 18
	Distribution, heavy duty	DA-IV	9, 10, 18
	Intermediate	GP	9, 10, 18
Westinghouse	Distribution, normal duty	GLV	9, 10
	Distribution, normal duty	LVBB	18

*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

NOTE: The arresters listed on this page may be used singly or in parallel, but must be applied in accordance with paragraph VI.A., in REA Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.

U ae - Arresters, Surge
(For underground system pole risers or pad-mounted equipment)

(Shielded for Underground System Pad-mounted Equipment)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
Metal oxide, AMOV1 U.D 10, 18 kV	1223 11/19/81	To obtain experience
<u>RTE</u>		
Metal Oxide Elbow Arrester M.O.V.E. 9, 18 kV	1185 4/24/81	To obtain experience

(For Underground System Pole Risers)

<u>General Electric</u>		
Metal Oxide, Tranquell U.D 10, 18 kV	1185 4/24/80	To obtain experience
Metal Oxide, Tranquell Intermediate Class 9, 10, 18 kV	1197 10/9/80	To obtain experience
<u>McGraw-Edison</u>		
Metal Oxide, AVZ1B 9/10, 18 kV	1223 11/9/81	To obtain experience

January 1982

U an - Transformers, distribution
pad-mounted, dead-front

(For underground application)

Applicable Specifications: "REA Specifications for Pad-Mounted Transformers," U-5

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three-Phase</u>
Central Moloney (2,4)	"REA-LP" 25-167 kVA	
Chance (2)	"Turf Hugger-R" 15-167-kVA	"Turf Hugger-R" 45-500 kVA
Dowzer (3,4)	"METRI-PAD" 25-167 kVA	"PM3W-R" 75-500 kVA
ERMCO (1) (4,6) (2,4)	"Trimline" 10-50 kVA "Low-Profile" 10-50 kVA "Low-Profile" 75 kVA	
General Electric (2,4)	"Mini-Pad III - REA" 10-167 kVA	"Compad II - REA" 75-2500 kVA
Howard (2,4)	"HiPad REA" 10-167 kVA	"HiPad 3 REA" 45-2500 kVA
Kuhlman (2,4)	"Lo-Pak ALR" 25-167 kVA	
McGraw-Edison (2,4)	Series 20/30 REA 25-167 kVA	"REA Pad-Mount" 75-2500 kVA
NECO (2)	HMM-R, 10-50 kVA SP-R, 75-167 kVA	TP-R, 45-1000 kVA
H. K. Porter (2,4) (Delta-Star)	"Low Profile U 5-R" 25-167 kVA	"Porter U5-R3" 225-2500 kVA
RTE (2,4)	"REA Shrubline" 15-167 kVA	"REA Terra-Tran" 45-2500 kVA
United (Ky. AEC) (2,4)	"Pad-Mount" 15-75 kVA	

(1) 7.2/12.5 and 7.6/13.2 kV

(2) 7.2/12.5, 7.6/13.2 and 14.4/24.9 kV

(3) 7.2/12.5 and 7.6/13.2 kV (conditional listing for 14.4/24.9 kV)

(4) Dual voltage - same as for 14.4/24.9 kV, single phase

(5) Three-phase listing applies to 7.2/12.5 and 7.6/13.2 kV only

(6) 14.4/24.9 kV

July 1981

U an - Transformers, Distribution,
Direct Burial*

(5-25 kVA only)

Conditions: To obtain experience.

ManufacturerMetallic Tank
(Cathodic protection
required)Nonmetallic Tank
(Cathodic protection not
used)Central Moloney
(Meeting 993, 6/8/72)"Trenchmite" 15-25 kVA
Radial Feed or Loop Feed
(same end) only

-

Sargent-Tyee
(Meeting 1016, 5/10/73)

-

"No-Korrod"
10-25 kVA

*Direct burial transformers are at an early stage in their development. Large numbers of direct burial transformers should not be purchased from any one manufacturer by any one borrower in any one year. Carefull location records should be kept.

U ax - Cutout and Arrester, Combination
for Underground System Pole Risers

Nominal System Voltage	For 12.5Y/ 7.2 kV	For 13.2Y/ 7.6 kV	For 24.9Y/ 14.4 kV	
Cutout Maximum Voltage Rating	7.8 kV	15 kV	15 kV	27 kV
	1Ø	3Ø	1Ø and 3Ø	1Ø and 3Ø
Application	Risers	Risers	Risers	Risers
Cutout Current Rating	100 amps	100 amps	100 amps	100 amps
<u>Manufacturer</u>	<u>Catalog Numbers</u>			
Chance	C70J-2B64 Series	C70J-2F54 Series	C70J-2F54 Series	C70J-2L74 Series
General Electric	9F80	9F80	9F80	9F80
Joslyn	J9237-P2	J9237-P2/R	J9237-P2-R	J9267-D2
McGraw-Edison	AFS300B Series	AFS300C Series	AFS300C Series	AFS301D Series
Southern States	CA Series	CA Series	CA Series	CA Series
Westinghouse	7.8LBU-II/ 10 LV	15LBU-II/ 10 LV	15LBU-II/ 10 LV	24.9LBU-II/ 18 LV

NOTE: The units listed on this page may be used with single arresters or arresters in parallel, but must be applied in accordance with paragraph VI.A. in REA Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

U fz - Transformer Connector Block, Insulated

Multiple Cable Connectors

Watertight - For use in all locations.

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Utilco	Set Screw	TTF-SS, Watertight Insulated transformer Connector block

Non-Watertight - For use in above grade locations only

Alcoa	Lug	Interchange 1 ABBD Series (Disconnectable) Use with A9 insulating boots
Alcon	Set Screw	VBTT Series with double sealing sleeve
Burndy	Lug	Stud Mole
Electrical Spec. Prod. *	Lug Lug	Type SU (Permanent) Types SUR and RDSR (Removable) (With Types LA and A1 lugs and sleeve kits)
	Set Screw	Type UPS-I (Permanent) Type UPM-I (Disconnectable)
Fargo	Bolted Set Screw	GUC Series GUS-200S Series
Homac	Lug Lug	DF Series FTU 125 Series (Disconnectable) with flood seal sleeve kit
	Set Screw	UT-R Series
ITT	Lug Set Screw Set Screw	SCU, with lugs and sleeves TSB-J58C (Permanent) TSB-D58C (Disconnectable)
Penn Union	Lug Lug	Type DBAT-LH (Disconnectable) Use with Series DBTB, DBTBF and DBTH lug and sleeves kits
Reliable	Set Screw	15912-REA (Disconnectable)
RTE	Set Screw Set Screw	Uni-Joint (Disconnectable) Uni-Joint (Permanent)
Utilco	Set Screw Set Screw	PTF-IN (Permanent) PTF-IN-J (Disconnectable)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

October 1981

U fz - Transformer Connector Block, Insulated
Single Cable Connectors

Non-Watertight - For use in above grade locations only

Manufacturer

Catalog Number

Electrical Spec. Prod

Type SM transformer bushing
connector kit. (Stud to
aluminum cables through
350 kcmil)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U gp - Connector Blocks and Splices, Secondary

Watertight - For Use In All Locations

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Alcoa	Lug	Interchange-I ABB Series Use with A-9 insulating boots
Alcon	Set Screw	VPB Series
AMP	Compression	600 Volts secondary UG Distribution 4-way and 6-way bus system
Blackburn	Lug Set Screw	Series UP (with lugs and sleeves) Series UB (1000 amp bus with sleeves)
Burndy	Lug	URD Mole
Electrical Spec. Prod.	Lug Set Screw	Type UC (8 AWG - 500 kcmil) (with LA lug and sleeve) Type UB (with sleeve) Splice Type ACL-HSH (6AWG - 500 kcmil)
Fargo	Set Screw	GU-500 Series
Homac	Lug Lug Set Screw	FS-95 Series with flood seal sleeve kit (8 AWG - 350 kcmil) FS-125 Series with flood seal sleeve kit (350 - 500 kcmil) SHC Series
Kearney	Compression Compression	HCR HAR
Penn Union	Lug	DBA Series with DBTB, DBTBF and DBTH Series lug and sleeve kits
Reliable	Set Screw	15903-15908, 15910 with sleeve kit (4 AWG - 350 kcmil) 15911 with sleeve kit (500 - 750 kcmil)
RTE	Compression	Aqua Guard Splice Kit
Utilco	Set Screw	Safety Sub Splice - USPA-350SS

Non-Watertight - For Use in Above-Grade Pedestals Only

Electrical Spec. Prod.	Set Screw	UP-B Series
Fargo	Set Screw	GUS-200 Series
ITT Blackburn	Set Screw	Type PSB-C

U gq
July 1981

U gq - Boot or sleeve, insulated*

Manufacturer

ITT Blackburn

Catalog Number

MPC9
MPC15

Electrical Materials

100-B (for pad-mounted
transformer spade
terminals)

*Use restricted to 120/208 volt 500 kVA transformers and larger not
equipped with threaded studs.

July 1981

U hb - Cable Accessories

(When ordering specify insulation diameter)

Concentric Neutral Clamps (Bonding)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Reliable</u> Concentric neutral bonding clamp (Nos. 2329 & 2330)	1037 3/21/74	1. To obtain experience. 2. Only for bonding of anodes or other metals to the neutrals of <u>existing</u> cable installations. 3. Not to be used to connect neutral to grounding electrodes.
<u>Harco</u> URD cable clamp	1114 5/12/77	Same as above
<u>Electrical Specialty Prod.</u> Type GHC connector	1177 11/29/79	Same as above

U hc
January 1982

U hc - Cable Supports
15 and 25 kV

<u>Manufacturer</u>	<u>Catalog Number</u>	<u>Grip Dia. Range (inches)</u>
Kellems	022-16-011	0.81 to 0.94
	022-16-012	0.87 to 1.00
	022-16-013	0.94 to 1.06
	022-16-014	1.00 to 1.18
	022-16-015	1.06 to 1.25
	022-01-018	1.25 to 1.50
Lewis	A-U-SW-18	0.75 to 1.25
	A-U-SW-1.12	1.12 to 1.62
Economy Cable Grip	SPJ087-U	0.87 to 1.00
	SPJ100-U	1.00 to 1.12
	SPJ113-U	1.12 to 1.25
	SPC125-S-U	1.25 to 1.50
Fargo	GJ-854	0.718 to 0.919
	GJ-855	0.920 to 1.12
	GJ-856	1.12 to 1.50
Aluma-Form	CS-800 Series	0.75 to 2.0
Woodhead	35032 (SC075-U)	0.75 to 0.99
	35033 (SC100-U)	1.00 to 1.24
	35034 (SC125-U)	1.25 to 1.50
Slater	FCSD 14	0.82 to 0.95
	FCSD 15	0.88 to 1.00
	FCSD 16	0.95 to 1.06
	FCSD 17	1.01 to 1.19
	FCSD 18	1.07 to 1.26
	FC125-U	1.25 to 1.50

January 1982

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>7.2/12.5 kV</u>	
<u>McGraw-Edison</u> EH3A Series, single- phase, pad-mounted	1065 5/15/75	To obtain experience.
<u>Malton</u> MEF21	1108 2/17/77	To obtain experience.
<u>S & C</u> Mark III, Models PMS (with option G-7) 200 ampere three-pole switching and 200 ampere single-pole switching	1112 4/14/77 1198 10/23/80 1202 12/18/80	To obtain experience.
<u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 300 amp	1151 11/16/78	To obtain experience.
<u>Kearney</u> Fuse Pod, Cat. No. 1115 FP submersible fuse cover, 8.3 kV, 100 amp maximum	1184 4/10/80	To obtain experience
<u>G & W</u> PLDR, PFLDR (submersible and pad-mounted) single-phase and three-phase, fused or unfused switchgear. (Choice of deep well or deadbreak bushings) (must specify pentahead security bolt when ordering)	1200 11/20/80	To obtain experience

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

Conditional List

U he(2)

January 1982

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>14.4/24.9 kV</u>	
<u>Elliott</u>		
Type EPMR, single- and three-phase, pad-mounted	1030 11/21/73	To obtain experience.
<u>Gerard</u>		
Mod-Brk 6-125 and 6-325 Series, single- and three-phase pad-mounted	1047 8/8/74	To obtain experience.
<u>Powercon</u>		
Type PMF, single-phase pad-mounted	998 8/17/72	To obtain experience.
Type PMF, three-phase pad-mounted		
<u>RTE</u>		
Type LBS, single- and three-phase, pad- mounted, 300 amp	1095 8/11/76	To obtain experience.
<u>Inter-Alloys</u>		
Uni-Versal single- and three-phase pad-mount fusible switchgear and loadbreak switches Series UV-FL	1133 2/16/78	To obtain experience.
<u>Westinghouse</u>		
UTE, PAD-PAK pad-mounted switching device, single and three-phase, 200 amp	1151 11/16/78	To obtain experience.

NOTE 1: Enclosures on this page must comply with the dead-front requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U hw - Warning sign

Applicable Specifications: REA Drawings UM12-1 and UM12-2

<u>Manufacturer</u>	<u>Size (inches)</u>	<u>Danger Sign Catalog No.</u>	<u>Caution Sign Catalog No.</u>
Brady*	7 x 10 10 x 14	46133 46131	46043 46041
Dun-Lap*	7 x 10 10 x 14 14 x 20 20 x 28	DL-D710 DL-D1014 DL-D1420 DL-D2028	DL-C710 DL-C1014 DL-C1420 DL-C2028
Eastern Metal*	7 x 10 10 x 14 14 x 20 20 x 28	REA 12-1-710 REA 12-1-1014 REA 12-1-1420 REA 12-1-2028	REA 12-2-710 REA 12-2-1014 REA 12-2-1420 REA 12-2-2028
Lyle*	7 x 10 10 x 14 14 x 20 20 x 28	UM12-1-710 UM12-1-1014 UM12-1-1420 UM12-1-2028	UM12-2-710 UM12-2-1014 UM12-2-1420 UM12-2-2028
May Advertising	7 x 10 10 x 14 14 x 20 20 x 28	MY710C MY1014C MY1420C MY2028C	MY710B MY1014B MY1420B MY2028B
For pressure sensitive decal add "D" prefix to catalog number.			
Truck Sign Service*	7 x 10 10 x 14 14 x 20 20 x 28	TSD-710 TSD-1014 TSD-1420 TSD-2028	TSC-710 TSC-1014 TSC-1420 TSC-2028
Lem	7 x 10 10 x 14 14 x 20	LSS-1400 LSS-1401 LSS-1402	LSS-1500 LSS-1501 LSS-1502

U hx
July 1981

U hx - Cable Route Marker

Manufacturer

Catalog No.

Surface Mounted

Chance

C554-0001

Fargo

GM354

Above Grade

Chance

C554-0183

Dun-Lap

DL-R45
DL-R712

Lyle

UM12-712

May Advertising

MY45A
MY712A

For pressure sensitive decal add "D" prefix to catalog number.

Truck Sign Service

BCW-712

July 1981

U sd - Current Transformers

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Sangamo</u> Current transformers, direct burial, 600 v. Type KU-6 Type K2U-6 Type GU-6 Type HU-6	940 4/2/70	To obtain experience.

U si-1
January 1982

U si - Anodes, Sacrificial
(Drawings UML1-1, UM-26, UM27, M2-7)

Zinc Anodes*

	<u>Pre-Packaged With Connecting Wire</u>			<u>Bare Continuous Strip (Ribbon)</u>	
	<u>5.5 kg</u> <u>(12 lbs)</u>	<u>13.6 kg</u> <u>(30 lbs)</u>	<u>27.2 kg</u> <u>(60 lbs)</u>	<u>16 mm x 22 mm</u> <u>(5/8" x 7/8")</u>	<u>13 mm x 14 mm</u> <u>(1/2" x 9/16")</u>
Federated Metals	S-12 packaged	S-30 packaged	S-60 packaged	Regular size Type II	Junior size
Harco	AZC12GJ	AZC30GJ	AZC60HJ		
General Corrosion Service	12HII-4A	30HII-4A	60HII-4A		

*When ordering, specify zinc anodes that meet ASTM B418-73 Type II Composition and REA Specification DT-9, "REA Specification for Zinc Sacrificial Anodes."

July 1981

GP - Watthour Meter Test Sets

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Knopp, Inc.</u> "Uniload" Portable Test Set FS-8	1005 12/7/72	To obtain experience.

RESISTANCE TESTS SETS

	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Associated Research	255 263A	Ground resistance meter (vibroground)	IV IV
	2201	Ohmmeter, insulation resistance tester	IV
Biddle	21159	Ohmmeter, insulation resistance tester	IV
Chance (Hipotronics)			
	C417 Series	Ohmmeter, insulation resistance tester	IV

*Refer to "Part III - General Plant Items" for explanation of groups.